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VIRGIN ISLANDS AGRICULTURAL EXPERIMENT STATION
ST. CROIX, VIRGIN ISLANDS, U. S. A.
Under the supervision of the
UNITED STATES DEPARTMENT OF AGRICULTURE

REPORT OF THE VIRGIN ISLANDS AGRICULTURAL EXPERIMENT STATION

1930

Issued June, 1931

UNITED STATES DEPARTMENT OF AGRICULTURE
OFFICE OF EXPERIMENT STATIONS

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VIRGIN ISLANDS AGRICULTURAL EXPERIMENT STATION, ST. CROIX

[Under the supervision of the Office of Experiment Stations, United States Department of Agriculture]

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[1] Detailed as agriculturist on the islands of St. Thomas and St. John.

VIRGIN ISLANDS AGRICULTURAL EXPERIMENT STATION

ST. CROIX, VIRGIN ISLANDS, U. S. A.

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Washington, D. C. June, 1931

REPORT OF THE VIRGIN ISLANDS AGRICULTURAL EXPERIMENT STATION, 1930

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REPORT OF THE DIRECTOR

By J. B. Thompson

During the fiscal year 1930 the rainfall in the Virgin Islands was below normal. At the experiment station in St. Croix the total precipitation was 37.77 inches, or just about 10 inches under normal. An extremely dry period prevailed from February to June, inclusive, during which only 6.65 inches of rain fell. The drought did not affect the sugar crop of the current year, but the ill effects will likely be reflected in a decreased yield in 1931. The prolonged period of dry weather seriously affected pasturage and retarded many of the station operations.

The general agricultural outlook in St. Croix did not appear to be very encouraging at the close of the year. A series of misfortunes, including recurrent dry seasons, labor difficulties, the hurricane of 1928, and finally the low prices paid for sugar in 1930, have militated against the success of the principal sugar-manufacturing company of the island. As a result, this company, which produced most of the sugarcane in St. Croix, was forced to discontinue operations at the close of May, and a large part of the population of the islands was thrown out of employment.

In the animal husbandry and veterinary division the work included general management of the station herd, supervision of the enforce-

ment of quarantine regulations and of dippings in St. Croix, and miscellaneous veterinary practice in the general interest of the livestock industry. In addition to his regular duties, the animal husbandman and veterinarian attended 7 meetings of the St. Croix Livestock Association, made 496 visits in the performance of his duty as veterinarian, and traveled 4,572 miles to further the interests of the local animal industry.

In the horticultural division numerous valuable fruit introductions, including many superior varieties of mangoes and avocados, were made. Spraying with a 2 to 3 per cent paraffin-oil emulsion at intervals not exceeding 60 days was effective in controlling the pustule scale on figs. Experiments were continued to determine the possibility of marketing tomatoes, eggplants, peppers, and Bermuda onions in New York during the winter.

The work in agronomy was concentrated chiefly on sugarcane breeding, the best cultural methods for the crop, and on cotton and forage-crop problems.

The agriculturist continued his efforts to promote agricultural development in St. John and St. Thomas. Progress was made notwithstanding certain setbacks from the drought in the spring. In addition to his regular duties, the agriculturist traveled 3,629 miles making farm calls and attending agricultural meetings. During the year 534 persons called at the extension office for information on matters pertaining to the farm and to the home.

SWEETPOTATO WORK

Seventeen of the best sweetpotato seedling varieties were grown in comparison with the Black Rock, the standard local variety. The planting was replicated three times, each number occupying standard 50-foot row plats which have been uniformly employed during the past six years. Table 1 gives the average yields per plat of 14 high-yielding St. Croix seedling varieties and of the Black Rock variety.

TABLE 1.—*Comparison of annual yields of 14 St. Croix seedling sweetpotatoes and of the Black Rock, the standard native variety*

Seedling No.	Average yield per plat		Seedling No.	Average yield per plat	
	Seedling	Black Rock		Seedling	Black Rock
	Pounds	*Pounds*		*Pounds*	*Pounds*
749A[1]	83.0	41.0	441	47.0	40.3
749B[1]	80.0	45.0	828	45.0	40.3
162	61.6	38.3	567	44.0	38.3
550	58.3	41.0	498	42.6	45.3
46	57.0	41.0	426	37.3	45.3
539	55.3	46.0	411	31.0	41.0
447	52.6	41.0	463	23.6	41.3

[1] Nos. 749A and 749B represent different plat series, but the variety is the same.

A comparison of Black Rock and SC 794 was made on alternate plats of one-eighth of an acre of land each. Eight ⅛-acre plats were planted with each variety. SC 794 yielded 28,037 pounds, and Black Rock 16,526 pounds. The total yield on an unbroken area of 2 acres (1 of Black Rock and 1 of SC 794) was 810 bushels (55 pounds per bushel), and from the acre planted with SC 794, 509

bushels. Production costs per bushel of 55 pounds, including harvesting, bagging, and weighing, was $0.16 for SC 794, and $0.27 for Black Rock. An excessive amount of tedious hand labor was used in preparing the land and in harvesting, and costs might have been reduced materially by growing the crop on a sufficiently large area to justify the use of modern implements.

BANANAS

A planting of Cavandish bananas was made in October, 1925, on approximately one-third of an acre of especially selected low cane land. The first fruits matured in September, 1926. Extremely dry seasons have had a deleterious effect upon the planting, which as a result has not borne consistently from year to year and has produced small bunches and small fruits. During the past two years the demand for plants from this area has been such as to affect production adversely. Table 2 shows the yield records for the planting by fiscal years since the time the experiment was begun.

TABLE 2.—*Banana yields from a ⅓-acre plat for the period July 1, 1927, to June 30, 1930*

Fiscal year	Bunches of bananas	Average weight per bunch	Total weight
	Number	*Pounds*	*Pounds*
1927	80	28½	2,260
1928	236	46	10,911
1929	(1)	(1)	(1)
1930	249	30	7,470

[1] Because of dry weather conditions in the latter part of the fiscal year 1928 and the hurricane in September, 1928, the banana planting failed to fruit.

The banana is easily grown. It can not be regarded as a commercial possibility in St. Croix so far as export marketing is concerned, but on certain areas the fruit can be grown profitably for the local market.

LATH-COVERED PROPAGATION-HOUSE WORK

Work in the propagation house has for its object the provision of means of handling valuable plants following their introduction into the Virgin Islands, or during adverse weather conditions when they can not be well cared for in the open. There are no commercial nurseries in the Virgin Islands, and the station has therefore adopted the policy of growing a limited number of desirable plants for local distribution to encourage interest in the growing of economic and ornamental plants. The volume of the work was greater this year than ever before. In all 71,375 plants were distributed, including 2,275 fruit trees, 1,359 ornamentals, 4,287 hedge plants 8,865 vegetable plants, 369 shade trees and trees for street planting, 113 nut trees, 95 palms and miscellaneous other plants, and 54,012 sweet-potato cuttings.

STATION IMPROVEMENTS

Most of the water catchment area that was destroyed by the hurricane of September, 1928, was replaced. Galvanized-iron roof-

ing was placed on buildings occupying an area of approximately 5,400 square feet, and concrete flooring having an area of 3,600 square feet was laid on the hill above the 140,000-gallon reservoir. Concrete is superior to galvanized iron in permanency and in ability to withstand the force of hurricanes, but loses more water through absorption than does the galvanized iron, especially during periods of light showers in the hot summer. This defect can be remedied at slight additional cost, however, by using water glass or other filler.

A new cistern having a capacity of 30,000 gallons was constructed in the estates' village. The roofs of three dwellings, from which the rain water was previously lost, will collect water for storage in this cistern. The total roof area from which water is collected is sufficient to fill the cistern from a rainfall of 24 inches. The new cistern is on an incline and is largely below ground. The use of a reinforced-concrete cover reduces loss from evaporation and protects the water against contamination from outside sources. The cistern was constructed at a total cost of $638.89 in United States currency.

Some 2 miles of new fence was constructed during the year and 2 miles of old fence was repaired. Eighteen or twenty acres of land were cleared of heavy brush, and about 40 acres were cleared of weeds and a light growth of brush. Approximately 6 to 7 acres of land were planted with guinea grass for pasture improvement.

REPORT OF THE ANIMAL HUSBANDMAN AND VETERINARIAN

By G. A. Roberts

CATTLE

During the first nine months of the year the pasturage and water supply were ample to meet the needs of the station herd, but the dry weather prevailing in the last three months resulted in a serious shortage of both. The animals, however, remained in good flesh but showed a decided falling off in milk production.

The experiment begun some time ago to increase the milk production of the native dairy station herd was continued. All cows of proper age were bred either to the Milking Shorthorn or to the Guernsey sire. (Fig. 1.) Table 3 gives the milk and butterfat production of seven cows and four half-bred native Shorthorn heifers with their first calves.

Table 3.—*Comparison of milk and butterfat yields of seven cows and four heifers for the year ended June 30, 1930*

Cow	Length of time in milk	Total yield of milk	Total yield of butterfat
	Days	*Pounds*	*Pounds*
Cherry (native)	249	2,099	89.8
Alma (native)	188	2,409	120.6
Mary (native)	231	3,084	134.7
Blossom (native)	291	3,548	154.9
Berry (grade Holstein)	365	4,555	197.6
Ellen (Guernsey)	344	2,651	109.5
Ruby (Shorthorn×native)	297	2,122	101.5
May (Guernsey)	249	1,527	62.6
Lassie (Shorthorn×native)	60	419	16.7
Min (Shorthorn×native)	276	2,070	83.7
Spot (Shorthorn×native)	60	464	18.3

The cows and heifers were fed no concentrates but subsisted on pasturage supplemented with a limited amount of sugarcane as a soiling crop during a short period. The calves were removed from

FIGURE 1.—Result of crossing a Milking Shorthorn bull and a native cow

their dams at birth and fed by hand, and the cows were milked twice a day. Tests for butterfat were made once a month of composite samples from six consecutive milkings. (Figs. 2 and 3.)

FIGURE 2.—A good type of native cow, Blossom

NOTES ON THE STATION HERD

During the year the herd of cattle was increased by 12 births. Seven head of cattle were sold and five died. With the beginning of the fiscal year 1930 the station had on hand 9 work mules, 1 old

horse, 12 work oxen, 8 young bulls and steers, 1 purebred Guernsey herd bull, 13 cows, 7 heifers, and 10 calves.

The feces of each calf in the herd were microscopically examined monthly to determine the seasonal prevalence in the animals of stomach and intestinal worms, the ages at which calves are most likely to be seriously affected with these internal parasites, and the need for treating the animals. Six mules and 6 cattle were treated for minor complaints, 10 mules for mange, and 4 calves for severe diarrhea. Other activities with the station herd included the castration of 1 mule and 1 bull, and the post-mortem examination of 4 cattle and 1 mule.

The presence of the cattle tick in unusually great numbers made it imperative to dip the station cattle and other island cattle at frequent intervals. Twenty-nine tests were made at the station to de-

FIGURE 3.—A grade-Holstein cow, Berry

termine the requisite strengths of the arsenical solutions used in the dipping vats, and 446 station animals were dipped once or twice on 40 occasions.

MISCELLANEOUS ACTIVITIES

The animal husbandman and veterinarian devoted a large part of his time to veterinary practice in the interest of the stockmen of the island. He issued certificates for 1,231 animals showing that the requirements of the quarantine regulations had been complied with. Of these animals, all but six were cattle for shipment to the Porto Rico market.

Seven consultations were held regarding the building of new dipping vats or the remodeling of old ones and five regarding the kind of dip to use for cattle. Four new dipping vats were constructed in St. Croix, and two more are in course of construction.

During the year 59 tests were made of arsenical baths for cattle dipping in neighboring vats; on 68 occasions the dipping of 3,907 cattle was supervised for farmers, and on 19 occasions 981 cattle

belonging to private owners were brought to the station for dipping. A total of 526 animals, including 212 cattle, 178 sheep, 52 goats, and 84 hogs, introduced from Tortola, were inspected on 65 occasions. These animals were brought in by butchers mostly to supply local meat demands. Comparatively few of the local animals were slaughtered for market.

Of the animals introduced into St. Croix during the calendar year 1929, 196 were cattle having a value of $5,381, 355 were sheep and goats having a value of $1,398, and 200 were hogs having a value of $902.

Fecal material from 61 animals, including 45 cattle, 7 horses, 3 sheep, and 6 hogs, was microscopically examined for evidence of worm or worm-egg infestation. Some 151 horses, mules, and donkeys and 136 cattle were treated for various complaints. Six horses, mules, and donkeys were found to be suffering from tetanus, and nine horses were given antitoxin injections to safeguard them from disease.

An undetermined trouble, causing loss of flesh and emaciation and the death of about 40 of the affected animals, was prevalent in adult cattle on the north and west sides of the island. Several cases of retained placenta, suggestive of contagious-abortion infection, were found. Two sheep were treated for stomach worms and one goat for puerperal eclampsia. Treatments for various troubles were also given to 4 hogs, 37 dogs, and 2 cats. Forty-eight animals were castrated and 48 others, including 14 horses and mules, 22 cattle, 4 hogs, 4 dogs and cats, and 4 fowls, were examined without treatment. Sixteen horses and mules were examined before or after death. In the former case the owners were advised to kill the animals because of old age or incurable conditions. Post-mortem examination was made of 8 cattle, 1 sheep, and 1 hog.

REPORT OF THE HORTICULTURIST

By Claud L. Horn

EXPERIMENTS WITH TRUCK CROPS

Tomatoes, eggplants, peppers, and Bermuda onions were again grown to determine the feasibility of marketing them in New York during the winter.

The Bonny Best and Marglobe varieties of tomatoes were transplanted in equal lots August 19 on a ¾-acre plat. Seven shipments aggregating 118 crates were made to New York between November 15 and February 7. The tomatoes brought from $1 to $4.50 per crate. Forty-two per cent of the crop was marketed as grade 1, and 58 per cent as grade 2 tomatoes. The cost of production was $0.86; harvesting, grading, and preparing for market (including crates and wrappers), $0.65; and transportation and marketing, $1.15 per crate. The total cost of production and marketing was $2.66 per crate, which was $0.18 more than the average selling price.

The Black Beauty variety of eggplant was transplanted September 10, 11, and 12 on an acre plat. Eight shipments, totaling 271 crates, were made to New York between November 15 and January 24. The eggplants brought from $1.25 to $3.25 per crate. Approxi-

mately 30 per cent of the crop was marketed as grade 1 eggplants, and 70 per cent as grade 2 eggplants. The cost of production was $0.41; harvesting and preparing for market (including crates and wrappers), $0.53; and transportation and marketing, $1.14 per crate. The total cost of production and marketing was $2.08 per crate, which was $0.04 more than the average selling price. The crop was not affected by blight as was the case in the two preceding years.

The Ruby King variety of pepper was transplanted August 20, 21, and 22 on a ⅔-acre plat. Nine shipments totaling 154 crates were made to New York between November 15 and February 22. The peppers brought from $1.75 to $5.75 per crate. The cost of production was $0.68; harvesting and preparing for market (including crates), $0.56; and transportation and marketing, $1.17 per crate. The total cost of production and marketing was $2.41, which left a profit of $0.20. Only 38 per cent of the crop was marketed as grade 1 peppers, and 62 per cent was marketed as grade 2 peppers.

FIGURE 4.—The larger of the two trees is the Fernandez mango. A small limb of this Fernandez tree is being inarched on a seedling plant to get Fernandez on seedling root

The yellow Bermuda variety of onion was transplanted during the latter part of September on a ⅔-acre plat. Five shipments aggregating 243 crates were made between January 24 and March 7. The onions brought from $0.75 to $1.75 per crate, with an average of $0.99. Approximately 18.52 per cent of the crop was marketed as grade 1 onions, and 17.69 per cent as grade 2 onions, while 63.79 per cent was of quality too poor to permit grading. The cost of production was $0.78; harvesting and preparing for market (including crates), $0.42; and transportation and marketing, $0.86 per crate. The total cost of production and marketing was $2.06 per crate which represented a loss of $1.07. The yield of onions was very good, but the proportion of doubles and splits was large. The tendency of Bermuda onions to produce many large and poorly formed bulbs is a serious drawback to their successful production commercially in the Virgin Islands.

AVOCADOS

The Family and Trapp varieties of avocado fruited again, and the Barker variety produced fruit for the first time at 4 years of age in the field. During the year good, stocky plants of the varieties Mexicola, Duke, Queen, Itzamne, Benik, Puebla, Ganter, Mayapan, Dickenson, Prince, Dutton, Ishim, Nabel, Anaheim, Panchoy, Thompson, and Blackbird were introduced at the station for trial from California.

MANGOES

The mango varieties Colombo, Kidney, Alfonso, Sandersha, Cecil, Itamaraca, Fernandez, and Goa Alphonse were introduced during the year and appear to be well established in the experimental orchard. Inarched plants have been taken from the varieties Fernandez (fig. 4) and Goa Alphonse and from a well-known local tree, called the McBean mango, for planting in the experimental orchard.

DATES

The date is not grown to any appreciable extent in the Virgin Islands, but the growth of some of the palms in the station arboretum seems to indicate that the plant should be given a trial. The soil in the arboretum is underlain by a white chalky marl and is not thought to be especially favorable for date culture. Sixteen seedlings of the Deglet Noor variety in the arboretum are now, at six years after planting the seed, 6.6 feet in average height and in thrifty condition. (Fig. 5.) An offshoot of a variety that is claimed to be seedless was obtained from the island of St. John and planted in the arboretum six years ago. This plant is now over 9 feet in height and has produced several offshoots.

FIGURE 5.—Seedling of the Deglet Noor variety of date six years after the seed was planted

CITRUS

Thirteen trees of the Meyer lemon (fig. 6) from cuttings were planted in the experimental orchard in November. All have grown

well and average 4.4 feet in height. Four of the trees carry well-developed fruits.

FIGS

Results of spraying experiments indicate that a 2 per cent paraffin-oil emulsion, applied at intervals of 60 days, is the minimum application for use in effectively controlling the pustule scale (*Asterolecanium pustulans*) on fig trees.

FIGURE 6.—Meyer lemon tree at one and one-half years after cutting was planted

REPORT OF THE AGRONOMIST

By MAYBIN S. BAKER

SUGARCANE

The total yield of sugar for the season 1929–30 is estimated at approximately 6,000 short tons, which is 2,000 tons more than was produced in 1928–29, and 50 per cent less than in 1927–28. Production was increased by ample rainfall during the growing season, the precipitation recorded at the station for the 16-month period, September, 1928, to December, 1929, inclusive, being 59.53 inches.

The average yield of sugarcane at the station for the year 1930 surpassed that of any of the six preceding years. Increased yield is attributed to thorough preparation of the soil, good cultivation, and the practice of plowing under cover crops and other humus-forming materials.

VARIETIES

Seven new varieties of sugarcane from Guadeloupe, 4 from Porto Rico, 2 from Barbados, and 2 from the Bureau of Plant Industry, United States Department of Agriculture, were added to those previously grown in the test field. Several other varieties are being grown in quarantine in St. Thomas.

The varieties were arranged in the plat so as to minimize the influences of differences in soil, fertility, and border effect, and therefore permit of obtaining fairly reliable results. Every fifth row

in the plat was left to serve as a check and was planted with SC 12/4. Thirty-eight varieties and 21 of the group of seedlings grown and developed at the station in 1926 were included in the test. In making the variety test the plat was arranged as is shown in Figure 7.

Trial plantings of 15 varieties of cane leading in production of sugar per acre were made during the year to permit comparison

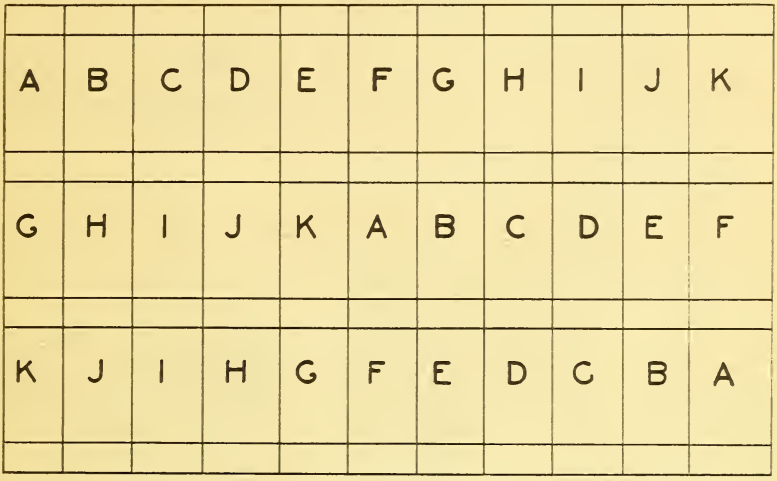

FIGURE 7.—Plat arrangement for sugarcane variety test. Each letter represents a variety

with SC 12/4, used as a control. Table 4 gives the results of the varieties in the order of their merit in sucrose content and the cane tonnage and ratio of quality.

TABLE 4.—*Comparison of yields of sugarcane tonnage and ratio of quality of 15 varieties of sugarcane and of SC 12/4 (check), grown at the experiment station in St. Croix in 1929–30*

Variety	Weight of cane per acre	Sucrose content per acre of plant cane	Ratio of quality	Check	Weight of cane per acre	Sucrose content per acre of plant cane	Ratio of quality
	Tons	*Tons*			*Tons*	*Tons*	
SC 12/4	48.93	7.06	6.9	SC 12/4	40.24	5.73	7.0
SC 22/21	48.15	6.73	7.1	do	40.17	5.61	7.2
SC 26/102	46.31	6.63	6.9	do	37.57	5.27	7.1
POJ 2379	50.34	6.60	7.6	do	39.88	5.88	6.7
SC 26/81	45.99	6.51	7.1	do	36.73	5.58	6.5
SC 26/150	46.66	6.37	7.3	do	37.76	5.55	6.8
SC 26/151	42.21	6.00	7.0	do	37.17	5.41	6.8
SC 26/157	46.63	5.79	8.1	do	33.17	4.71	7.0
Ribbon	44.80	5.78	7.7	do	36.24	4.93	7.3
SC 26/140	43.81	5.40	8.1	do	40.05	5.95	6.7
Uba 909	46.05	5.22	8.8	do	48.05	6.92	6.9
POJ 228	43.73	5.18	8.4	do	33.64	4.66	7.2
Uba 797	51.21	5.03	10.2	do	41.98	6.39	6.5
Uba 796	43.01	4.72	9.1	do	35.66	4.88	7.3
POJ 979	40.43	4.50	8.9	do	41.67	6.00	6.9

Winters' formula, used for calculating yields of 96° sugar for each variety, was derived as follows:

Purity of juice extracted with small laboratory mill −6. (This conversion is believed to give purity figures comparable with those obtained in modern factories.)

$$\text{Sucrose in juice} = \frac{\text{Purity} \times \text{Brix}}{100}$$

$$\text{Tons of sucrose in normal juice} = \frac{\text{Tonnage} \times \text{extraction} \times \text{indicated sucrose}}{100}$$

$$\text{Available sucrose in tons} = \frac{(1.4-40) \times \text{sucrose in normal juice}}{\text{Purity}}$$

$$\text{Yield of 96° sugar} = \frac{\text{Available sucrose}}{0.96}$$

In yields of sugar in the experimental plats for the past six years the varieties SC 12/4, SC 22/21, POJ 228, POJ 979, and Uba 796 have ranked among the 10 leading canes three times, and the variety Uba 797 twice during the same period. Table 4 shows that six of the 1926 group of seedlings ranked high among the best sugar-producing varieties in 1930. On the basis of cane tonnage the variety Kassoer (fig. 8) gave the highest yield of cane, 76.93 tons per acre, but it is not included in the table because the sugar yield was low.

SEEDLINGS

Approximately 10,000 sugarcane seedlings were germinated from arrows, and about 4,000 of these are to be planted in the nursery.

Only three selections from the 25 seedlings grown in 1928–29 were made and planted in increase plats. Of 78 seedlings of the 1928 series, 39.7 per cent had a content of over 20 per cent of sucrose. On the basis of cane tonnage these varieties gave estimated yields of 20 to 75 tons per acre.

Because of the damage done to the previous crop by the hurricane of September, 1928, the seedlings of the 1927 group were not tested until this year. Of the 157 that were cut during the year, 48 were discarded and 109 were kept for further trial. Of the lot tested, 26.6 per cent contained over 20 per cent of sucrose. On the basis of cane tonnage these varieties gave estimated yields of 15 to 80 tons per acre.

In the 1926 series, seedlings Nos. SC 26/102, SC 26/40, SC 26/81, SC 26/150, SC 26/151, SC 26/157, SC 26/41, SC 26/85, and SC 26/128 are all promising. The first six numbers were among the 15 leading varieties in yield of sugar in the tests of 1930. (Table 4.) Of the 74 numbers in the 1926 series, 28.4 per cent yielded juice containing over 20 per cent of sucrose. Seedling SC 26/128 yielded juice containing 23 per cent of sucrose. On the basis of cane tonnage these seedlings gave estimated yields varying from 20 to 60 tons per acre.

A relatively large proportion of the seedlings having for a parent SC 12/4, a vigorous stooling cane, has been found to produce large canes ranking high in sucrose content.

Twenty-eight seedlings were germinated from arrows of the variety Kassoer which had been surrounded by SC 12/4 arrows during the

period of development. It is hoped that crosses have been obtained between these two important varieties.

Although loss in vitality of seed takes place in St. Croix soon after maturity, it is sometimes necessary to delay planting the seed after collection. In a test to learn the effect on germination of storing, a lot of sun-dried sugarcane seed was hermetically sealed with small quantities of calcium chloride in mason fruit jars of 1-quart capacity. After being allowed to stand for 60 days, the seed was found to be viable and when planted germinated.

FIGURE 8.—Sugarcane variety Kassoer

CULTURAL EXPERIMENTS

Results of spacing tests undertaken to determine the effect on yield of planting at different distances gave relatively best results on the more closely planted plats. The varieties Crystallina and SC 12/4 were used in the tests. Comparisons were made of the results of planting in rows 60 inches, 57 inches, 54 inches, 48 inches, and 42 inches apart, with the plants being spaced 12 inches, 18 inches, and 36 inches apart in the row. The heaviest yields of the Crystallina variety were obtained on spacings of 60 inches by 30 inches, whereas SC 12/4 made its best crop on spacings 42 inches in either direction. (Fig. 9.)

COTTON

Experimental work with cotton was resumed following a 2-year closed season to control the pink bollworm. Sea-island cotton usually is grown commercially in the Virgin Islands, and for this reason it was grown in comparison with different varieties of upland cotton, the seed of which came from the Bureau of Plant Industry, United States Department of Agriculture. The yield of seed cotton for the different varieties is shown in Table 5.

TABLE 5.—*Comparison of 10 varieties of cotton grown at the experiment station in St. Croix in 1929–30*

Variety	Yield of seed cotton per plat	Calculated yield of seed cotton per acre	Variety	Yield of seed cotton per plat	Calculated yield of seed cotton per acre
	Pounds	*Pounds*		*Pounds*	*Pounds*
Acala (Indio)	31.00	1,929.13	Cokers Foster No. 300	21.75	1,353.50
Acala S–5–4–1 [1]	26.50	1,649.10	Sea island (Heath strain)	20.18	1,255.80
Acala (okra leaf)[1]	25.37	1,578.78	Cokers Super-Seven No. 4	19.50	1,213.49
Cokers Wild No. 1	24.63	1,532.13	Cokers Delta Type Webber No. 7	16.75	1,042.35
Pima Egyptian	23.94	1,489.79	Meade	15.88	988.21

[1] From seed from Shafter, Calif.

Pink-bollworm (*Pectinophora gossypiella*) larvæ were found in the first blooms that opened, and about 15 per cent of the bolls were

FIGURE 9.—Cutting sugarcane in spacing test

infested. Prior to being planted the seed was treated with sulphuric acid.

PINK-BOLLWORM CONTROL

In an effort to check the ravages of the pink bollworm, one plat of five rows of sea-island cotton was sprayed at regular intervals with Bordeaux mixture in which lead arsenate had been incorporated. Bordeaux mixture was used in the hope it would act as a repellent, and the lead arsenate was added because of its poisonous effects. The treated plat yielded 159.9 pounds more of seed cotton per acre than did the untreated plat. Paradichlorobenzene in kerosene was also used to control pink-bollworm infestation. The solution was poured around the roots of the cotton plants and did not injure them. The odor of the solution was noticeable in the treated plat

for 60 days following the application. The mixture will be tested again for pink-bollworm control.

BREEDING

One hundred and thirty-six reciprocal crosses were made between sea-island cotton and the varieties of upland cotton shown in Table 5. Twenty varietal types of cotton were introduced for trial. Seed from the plants of the more desirable of these types was selected for planting next year.

FORAGE-CROP WORK

Work was continued with forage crops and with grain sorghums. Sorghums that were harvested when the seed heads were just emerging produced crops ranging from 6 to 18 tons of green forage per acre. In other plantings, harvested after the seed crop had matured, the seed heads were removed first and weighed, and the green forage was cut later and weighed. The grain crop ranged from 0.98 to 2.5 tons per acre, and the yield of green forage from 3.26 to 12.88 tons per acre. Feterita and Early Orange sorghum gave the highest yields for forage and Kafir the heaviest crop of grain.

Of the legumes tested, cowpeas, velvetbeans, and pigeon peas continued to give the best results. Alfalfa gave better results than in previous years. Three cuttings, made at intervals of 35 days, yielded from 6 to 12 tons of green forage per acre. Arizona Common gave the highest yield and Grimm the lowest. Growth was slow and sparse during the dry season, but the seed production was unusually heavy then.

GRASSES

Among the introduced grasses, Dallis grass (*Paspalum dilatatum*), Bahia grass (*P. notatum*), Jaraguá grass (*Andropogon rufus*), molasses grass (*Melinis minutiflora*), Igoka grass (*Capriola* sp.) are promising and should be tested under pasture conditions. Molasses grass in particular has proved to be adapted to local dry-weather conditions.

Practically all the pasture lands along the western end and along the southern shore of St. Croix are overrun with *Andropogon pertusus panormitanus*, locally known as "sour" or "hurricane" grass. Once established, this aggressive grass crowds out all other grass and vegetation. A cooperative experiment is to be begun on typical sour-grass land to determine the most practical methods for eradicating the pest.

GREEN-MANURE CROPS

The results of work with green-manure crops tends to corroborate those previously obtained and indicate that sunn hemp (*Crotalaria juncea*), the jack bean (*Canavalia ensiformis*), cowpeas, pigeon peas, and the velvetbean might profitably be used for green-manuring purposes in the Virgin Islands.

Hubam clover, introduced and planted during the past season, grew to a height of 4 feet and merits further trial. A native legume (*Canavalia maritima*) is also promising as a green-manure and cover crop.

REPORT OF THE AGRICULTURIST FOR ST. THOMAS AND ST. JOHN

By W. M. Perry

The work intended to promote agricultural development in St. Thomas and St. John progressed satisfactorily despite certain setbacks from the spring drought.

POULTRY

The small flock of 12 Single Comb White Leghorn hens was again trap nested, and the weights of individual hens and the weights and numbers of their eggs were recorded. Eggs from only the heaviest layers were used for hatching purposes. During the calendar year 1929 seven of the birds produced 939 eggs, or an average of 134 eggs, and the other five laid only 291 eggs, which was an average of only 58 eggs per hen for the year.

Figure 10.—A young vineyard on the island of St. John

This work is necessarily restricted, but it is valuable because it affords the average local poultryman an opportunity to obtain at small cost purebred fowls for use as foundation stock. During the past year many persons expressed the desire to purchase stock, and 40 secured eggs for hatching. The demand for eggs from purebred stock is increasing yearly.

GRAPES

Vines of the Muscat of Alexandria grape, introduced as small cuttings from California through the Bureau of Plant Industry, United States Department of Agriculture, in March, 1929, and set in the municipal nursery in St. Thomas, were distributed in November. Small demonstration vineyards were started in various parts of St. Thomas and St. John. (Fig. 10.) In the drier regions the vines suffered severely during the spring drought, but in the more favored places they made remarkably vigorous growth and

have already borne some fruit. The present outlook for success from this venture is bright. Plants from this introduction were distributed to 37 adult persons and to 84 members of the Boys' and Girls' Garden Club. A few plants were also set in the various school gardens for use in conducting demonstrations of the best methods of staking and pruning.

CANNING DEMONSTRATIONS

A small steam-pressure canning outfit having a capacity for 48 pint tins was installed in the office of the agriculturist. (Fig. 11.) The outfit was received late in the season, but notwithstanding this fact sufficient tomatoes were secured to permit conducting one public canning demonstration. The work was done by the agriculturist, working in cooperation with the domestic science class of the St. Thomas High School, and was witnessed by about 50 persons. In

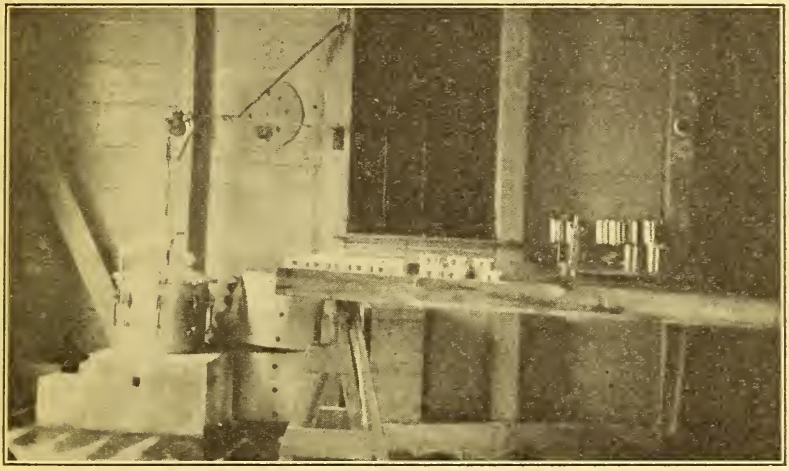

FIGURE 11.—A laboratory canning outfit, agriculturist's office, island of St. Thomas

connection with the resumption of experimental shipments of tomatoes to the New York market, fruits that ripen between shipments will be canned to minimize waste. Several cans of the native soursop (*Annona muricata*) were canned experimentally in April. When some of the cans were opened and examined at the end of the year the fruit was found to be in fine condition. A relatively large amount of canned soursop could possibly be marketed among the larger settlements of West Indians in New York and elsewhere. The canned fruit may be made into jellies, tarts, or ice cream, or used to make a refreshing beverage.

BERMUDA-ONION PRODUCTION

At the request of a company operating in St. Croix the agriculturist supervised the raising of 17 acres of Bermuda onions. A total yield of 220,000 pounds of onions was obtained, but late rains caused the crop to produce about 85 per cent of splits and doubles which

were hard to market. Low prices in New York prohibited the shipment of the crop to that market, but some of the onions were marketed in the West Indies. As a whole, the crop barely paid for expenses.

TOMATO-SEED PRODUCTION

The production of tomato seed of the Marglobe variety for a seed house in Philadelphia was only partly successful. Late planting resulted in a poor crop which was attacked by the eggplant leaf roller. The crop was given a severe roguing to eliminate all undesirable plants. Approximately 29 pounds of tomato seed was obtained.

MISCELLANEOUS ACTIVITIES

Citrus demonstrations are being started in St. Croix. Five groves have been laid out, and one has been planted with citrus, and pruned and sprayed. The other four groves will be planted during the next wet season. All work in these groves is to be done under the supervision of the agriculturist.

Following the passage of the Hawley-Smoot tariff bill with its increased duties on foreign-grown vegetables in the fresh state, preparations are being made to resume experimental shipments of tomatoes, peppers, eggplants, and Bermuda onions to mainland markets. This work was begun four years ago, but was discontinued because it was discovered that the market was being demoralized by unusually heavy shipments from other sources.

Two new dipping vats for freeing cattle from ticks were constructed during the year, making a total of three in St. Thomas and one vat in St. John. An aggregate of 1,601 head of cattle was dipped, and 116 head from foreign territory were inspected in accordance with provisions of the quarantine laws.

METEOROLOGICAL OBSERVATIONS

By A. Bisserup

Rainfall at the experiment station for the fiscal year ended June 30, 1930, measured 37.77 inches. The rainfall of January was unusually high and was followed by dry weather which lasted during the rest of the year. The summer temperatures were about normal. The absolute maximum temperature for the year was 90° F., recorded October 26, 1929, and the absolute minimum temperature was 58°, recorded March 22, 1930. Table 6 gives a summary of the meteorological data for the year.

TABLE 6.—*Condensed meteorological data for the experiment station in St. Croix for the year ended June 30, 1930*

Year and month	Temperature		Total rainfall	Average daily velocity of wind	Monthly evaporation
	Maximum	Minimum			
1929	°F.	°F.	Inches	Miles	Inches
July	84.9	73.7	2.47	45.3	6.294
August	84.8	73.3	4.18	37.6	5.667
September	84.9	71.9	9.03	23.3	6.037
October	85.3	72.0	2.63	21.4	4.856
November	81.0	70.8	5.07	39.4	3.881
December	80.0	69.5	2.99	46.9	4.148
1930					
January	79.2	67.6	4.75	45.8	5.652
February	79.7	66.0	1.78	24.9	4.466
March	81.4	67.5	1.10	30.3	6.067
April	82.3	70.9	1.25	36.5	5.916
May	85.1	72.1	.66	32.8	6.111
June	87.8	73.0	1.86	51.1	6.604
Total			37.77		65.70

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